



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
Powai, Mumbai 400076.

Ref. PR No. 1000048012

Rfx. No. 6100002237

Item Description – **Gas Chromatography**

Sr. No	Item Description	Detailed Technical Specification	Technical Compliance (Yes / No)	Additional Information (if any)
1.	Gas Chromatography	<p>Gas Chromatography with GSVFID and TCD Detectors for analysis inorganic and organic Gases at IITB Chemistry Dept</p> <p>Requirement of GC to detect following gases, with manual sampling methods. The GC need TCD and FID detector and methanizer. The gases, CO₂, CO, CH₄, C₂H₄ at MDL 2ppm and Hydrogen MLD 50ppm.</p>		
2.	General Features	<ul style="list-style-type: none">➤ Fully automated with programmable pneumatic control (digital control) for injector, detector, and purge gas.➤ Instrument should be compatible with the computer and the software should be Window 10 or the latest.➤ Basic system with EPC/AFC/PPC control for carrier/detector zone gases.➤ EPC/PPC/AFC should provide optimum performance with all types of columns and detectors➤ All parameters should be stored as a part of the method for better analysis reproducibility➤ System may have touch screen user interface for easy instrument operation		

3.	Gas Flow control	<ul style="list-style-type: none"> ➤ Must come standard with programmable pneumatic control ➤ Digital Pneumatic Control for setting column flow with pressure, flow, and linear velocity. ➤ Minimum Two – ramp pressure program should be available 		
4.	GC Oven capable of accommodating varying size columns	<p>Characteristics</p> <ul style="list-style-type: none"> ➤ Volume: approximately 10 Litres or more for easy fixing and removing different types/dimensions of columns without compromising the rate of heating or cooling of the oven. ➤ All temperature and time functions should be microprocessor controlled and displayed on the screen, column over-heat protection, should be settable upto 450° C, set point resolution must be at least 1°C, and cool down time from 250 °C to 50 °C 4.8 min or less ➤ Oven must accommodate up to two capillary columns including wide bore column. ➤ Column oven should have the possibility to program minimum 15 temperature ramps with 16 plateaus or better Temperature ramps should be 3 or more. ➤ Time settings: It should be 1 min increments for values 0 to 999 minutes or wider 		
5.	Gas Sampling Valve and Methanizer	<ul style="list-style-type: none"> ➤ System should have full Pneumatic Controlled Gas Sampling Valve. ➤ Multiple No. of Ports: 6 Ports to address application ➤ Gas Sampling Valve should be controllable through GC System Interface without PC Control. ➤ Valve should be with Standard 1 ml. 		

		<p>Sampling Loop.</p> <ul style="list-style-type: none"> ➤ Valve should have provision to connect packed ➤ Methanizer for lower detection of CO and CO₂ a per ISO method 		
6.	Detector	<ul style="list-style-type: none"> ➤ Detectors should be controlled by EPC/PPC/AFC. <p>Flame Ionization Detector</p> <ul style="list-style-type: none"> ➤ Operating temperature: 100° C to 450° C or higher in 1° C ➤ Minimum detectable quantity: <3x10⁻¹²gC/sec Octane or equivalent and better ➤ Linearity:>10⁷ ➤ Data rates up to 1,000 Hz <p>Thermal Conductivity Detector</p> <ul style="list-style-type: none"> ➤ Operating temperature: 100°C to 350° C or higher in 1° C increment ➤ Minimum detectable quantity: <1 ppm nonane ➤ Linearity:>10⁵ 		
7.	Software	<ul style="list-style-type: none"> ➤ Software performing data analyses at least as per DIN/ISO/US-EPA, calibration, blank correction, data import, export, handling and reporting, quality control protocols, computer-based training ➤ License copy of Software should be supplied along with/ pre-loaded on PC and GC system. ➤ Software suitable for dual channel GC should be upgradeable. 		
8.	Warranty	<ul style="list-style-type: none"> ➤ Minimum one years of warranty on the system from the Date of installation 		
9.	Columns	<ul style="list-style-type: none"> ➤ 4Ft 1/8 2mm Mol Sieve 13X 45/60 UM ➤ 8Ft 1/8 2mm Hays Sep N 80/100 UM 		